

What is claimed is:

1 1. A buffer for storing information organized into
2 packets, comprising:
3 a destructive-read dynamic random access memory
4 (drDRAM), information stored in the drDRAM being destroyed
5 following the information being read therefrom;
6 a random access memory (RAM);
7 at least one queue for storing a number of pointers
8 to locations where packets are stored in the drDRAM and the
9 RAM, wherein incoming fanout splitting packets are stored in
10 the RAM and remaining incoming packets are stored in the
11 drDRAM, and the (head-of-line) packet pointed to by the
12 pointer at the top of the at least one queue being
13 automatically read from the drDRAM and stored in the RAM for
14 subsequently providing the packet externally to the buffer.

1 2. The buffer of claim 1, wherein the RAM is a static
2 random access memory (SRAM).

1 3. The buffer of claim 1, wherein the RAM is a dynamic
2 random access memory (DRAM), information stored in the DRAM

3 is not destroyed following the information being read
4 therefrom.

1 4. The buffer of claim 1, wherein the at least one
2 queue comprises a plurality of queues, each queue capable of
3 storing a number of pointers to locations where received
4 packets are stored in the drDRAM and RAM, the head-of-line
5 packet pointed to by the pointer at the top of each queue
6 being automatically read from the drDRAM and stored in the
7 RAM for subsequently providing the packet externally to the
8 buffer.

1 5. The buffer of claim 1, wherein an incoming packet
2 to the buffer is automatically stored in the RAM in the event
3 the at least one queue is empty.

1 6. The buffer of claim 1, wherein following the head-
2 of-line packet being read from the buffer, a new head-of-line
3 packet is read from the drDRAM and stored in the RAM if the
4 at least one queue is not empty.

1 7. The buffer of claim 1, wherein the drDRAM is larger
2 than the RAM.

1 8. The buffer of claim 1, wherein the drDRAM is
2 organized in rows and columns of memory cells, at least one
3 row being divided into a plurality of groups of memory cells,
4 each group of memory cells being selectively individually
5 addressable.

1 9. The buffer of claim 1, wherein incoming unicast
2 packets or nonfanout splitting packets are initially
3 automatically stored in the drDRAM.

1 10. A method of storing packets of information,
2 comprising:
3 receiving a packet of information;
4 identifying a queue to which the received packet
5 is to be associated;
6 determining whether the identified queue is empty;
7 and
8 storing the received packet in at least one of a
9 first memory and a second memory based upon the determination
10 of whether the queue is empty.

1 11. The method of claim 10, further comprising:
2 determining whether the received packet is a fanout
3 splitting packet, wherein the step of storing is based upon
4 the determination of whether the received packet is a fanout
5 splitting packet.

1 12. The method of claim 11, wherein the step of storing
2 comprises storing the received packet in the first memory if
3 the received packet is determined not to be a fanout
4 splitting packet and storing the received packet in the

5 second memory if the received packet is determined to be a
6 fanout splitting packet.

1 13. The method of claim 10, further comprising:
2 determining whether the received packet is a
3 unicast packet or a nonfanout splitting packet, wherein the
4 step of storing is based upon the determination of whether
5 the received packet is a unicast packet or a nonfanout
6 splitting packet.

1 14. The method of claim 10, wherein the received packet
2 is stored in the first memory based upon a determination that
3 the queue is not empty, and stored in the second memory based
4 upon a determination that the queue is empty.

1 15. The method of claim 14, further comprising
2 transferring the received packet from the first memory to the
3 second memory upon the received packet becoming the head-of-
4 line packet associated with the queue.

1 16. A method of handling packets of information,
2 comprising:
3 storing a first incoming packet of information in
4 a first memory, the first packet being associated with at
5 least one queue;
6 transferring the first packet from a first memory
7 to a second memory upon the first packet becoming the head-
8 of-line packet for the at least one queue; and
9 sending the first packet to a telecommunications
10 device following the step of transferring.

1 17. The method of claim 16, further comprising:
2 determining whether a second incoming packet is a
3 fanout splitting packet; and
4 storing the second incoming packet in one of the
5 first memory and the second memory based upon the step of
6 determining.

1 18. The method of claim 17, wherein the step of storing
2 the second incoming packet comprises storing the second
3 incoming packet in the first memory upon the affirmative

4 determination that the second incoming packet is not a fanout
5 splitting packet, and storing the second incoming packet in
6 the second memory upon the affirmative determination that the
7 second incoming packet is a fanout splitting packet.

1 19. The method of claim 16, further comprising:
2 receiving a second incoming packet;
3 identifying a queue for containing a pointer for
4 pointing to a location where the second incoming packet is
5 to be stored;
6 determining whether the identified queue is empty;
7 and
8 storing the second incoming packet in one of the
9 first memory and the second memory based upon the step of
10 determining.

1 20. The method of claim 16, further comprising:
2 receiving a second packet of information;
3 determining whether the at least one queue is
4 empty; and

5 storing the second packet in the second memory
6 based upon the step of determining.

1 21. A system, comprising:
2 a node for communicating packets of information,
3 including a data buffer for receiving incoming packets of
4 information and selectively storing the packets in a first
5 memory, the data buffer including at least one queue for
6 pointing to locations in the data buffer where the packets
7 are stored, wherein a first packet is transferred from the
8 first memory to a second memory upon the first packet
9 becoming the head-of-line packet for the at least one queue,
10 the node transmitting the first packet from the second memory
11 externally to the node following the first packet being
12 stored in the second memory.

1 22. The system of claim 21, wherein the first memory
2 comprises a read-once memory in which stored data is
3 destroyed following being read from the first memory a first
4 time.

1 23. The system of claim 22, wherein the second memory
2 comprises a static random access memory.

1 24. The system of claim 22, wherein the second memory
2 comprises a dynamic random access memory which performs
3 nondestructive memory read operations.

1 25. The system of claim 21, wherein an incoming packet
2 is initially stored in the second memory in the event the at
3 least one queue is empty.